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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,942	04/13/2000	Warren M. Farnworth	4161US (98-1265)	6934

7590 01/10/2005

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EXAMINER

LEE, BENNY T

ART UNIT PAPER NUMBER

2817

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Address : COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

### FIELD DATA:

ARI 251

☐ This application has been examined ☒ Responsive to communication filed on 28 July + 12 Oct 2004 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s), \_\_\_\_\_ day(s) from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

**Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:**

1. ☒ Notice of References Cited by Examiner, PTO-892. 2. ☐ Notice re Patent Drawing, PTO-948.  
3. ☐ Notice of Art Cited by Applicant, PTO-1449. 4. ☐ Notice of Informal Patent Application, Form PTO-152  
5. ☐ Information on How to Effect Drawing Changes, PTO-1474. 6. ☐

## Part II SUMMARY OF ACTION

1. ☒ Claims 1-23 are pending in the application.
- Of the above, claims 1 are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-9; 10-12; 13; 14; 15-19; 20-21; 22; 23 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_ Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-848).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_ has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☒ The proposed drawing correction, filed 28 July 2004, has been ☒ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other \_\_\_\_\_

### EXAMINER'S ACTION

SN 54894  
U.S.GPO:1990-259-282

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The substitute specification filed 28 July 2004 has been reviewed by the examiner, found acceptable and has replaced the original specification. The following objection pertain to the entered substitute specification filed 28 July 2004:

The disclosure is objected to because of the following informalities: Note that reference label "W" appearing in Fig. 4 lacks description in the specification. Note that reference labels "16", appearing in Fig. 7, lacks explicit description relative to the specification description of Fig. 7. Appropriate correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the voltage reference trace(s) being spatially periodically coupled to a voltage reference at predetermined intervals (e.g. claims 1, 10, 13, 15, 20, 22, 23) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes

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are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 12, 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 12, 19, it is again noted whether the subject matter of this claim, as recited therein, can properly depend from the subject matter recited in claim 10, from which this claim directly depends. Note that claim 10 recites interalia that “the voltage reference portion has a greater surface area than the at least one signal trace”. As can be best ascertained, the subject matter of claim 10 appears to read on the embodiment of Fig. 13, where the surface area of the voltage reference trace (42) is greater than that of traces (38). However, the subject matter of claim 12 recites interalia that “at least one reference trace extending from the voltage reference bus”. As can be best ascertained, the subject matter of claim 12 appears to read on the embodiment of Fig. 12 in that voltage reference traces (34) extend from bus (30). However, as can be clearly ascertained from the fig. 12 embodiment, the voltage reference traces do not appear to have a greater surface area than the conductive traces (36), as required by claim 10, and hence this limitation has been incorporated by reference into claim 12, which directly depends from claim 10. Clarification is needed.

The following claims have been found objectionable for reasons set forth below:

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In claim 1, line 3, and claims 20, 23, last paragraph of each claim, first line therein, note that “formed” should be rewritten as --disposed-- for an appropriate characterization at each occurrence.

In claim 22, note that “..” should be correctly written as ---.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 7, 9; 10, 11; 15; 16, 18 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Kobayashi et al (of record), for reasons of record.

Claims 1, 8, 9; 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hoffman (of record), for reasons of record.

Claims 1, 2; 10, 11, 12; 15, 16; 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wakeling (of record), for reasons of record.

Claims 20, 21; 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes et al in view of either Kobayashi et al or Wakeling (all of record), for reasons of record.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes et al in view of Wakeling (both of record), for reasons of record.

Applicant's arguments filed 28 July 2004 have been fully considered but they are not persuasive.

With respect, to claims 1, 10, 13, 13, 19, 20, 22, 3, applicant has amended these claims to include the limitation that the “at least one voltage reference trace” is “also spatially periodically coupled to a reference voltage at intervals predetermined to maintain a substantially consistent reference voltage ...”. Moreover, it has been generally

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argued that the prior art references (i.e. Kobayashi, Hoffman, Wakeling) applied in the above rejections each fail to anticipate this feature in their disclosure.

Contrary to applicant's assertion, it should be noted that each one of the Kobayashi et al, Hoffman and Wakeling reference do indeed meet the amended limitation. For example, note from Kobayashi et al that a plurality of via conductors (e.g. 115) are spaced along the longitudinal length of the voltage reference traces (e.g. 114) and function to electrically connect the voltage reference traces to the ground layer (113). Likewise, note from Fig. 2 of Hoffman that conductive plugs or vias (47) are spatially disposed along the length of voltage reference traces (e.g. 37) which extend from conductive bus (19), and these plugs function to electrically connect the extending voltage reference traces to a ground potential on an opposite surface of the dielectric support (14). Similarly, note from Wakeling that the voltage reference area which is of greater surface area than the conductive traces include conductive vis holes (e.g. 30b) which are spaced apart along a longitudinal direction of the surface area and function to electrically connect the voltage reference area to a ground potential. Moreover, since each prior art reference provides for periodically spaced connection to ground potential, such a periodically spaced arrangement inherently would have provided a consistent voltage potential between the reference voltage traces or area and the voltage (i.e. ground) potential electrically connected thereto, by virtue of the number of periodically spaced and connected vias, as known to those of ordinary skill in the art. Therefore, as set forth above, the prior art references do indeed disclose the amended limitations of the claims cited above.

With respect to claim 19, it should be noted that applicant's arguments therewith do not appear commensurate with how claim 19 was actually amended. In particular, it should be noted that claim 19 does not include the same amended limitation found in the other independent claims which were amended. Rather claim 19 was amended to include the limitation that a voltage reference trace extends from a reference bus, and as pointed out in the above rejections, this claim, including the amended limitation, was anticipated by the appropriate prior art reference in the manner described previously.

Claims 6, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al or Wakeling (both of record) in view of Quan.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman (of record) in view of Quan.

As previously described, each of the printed circuit boards of the above cited primary references includes at least one conductive trace which is exposed to the external environment.

Quan (fig. 4C) discloses that it is conventional to provide a thin protective dielectric coating (55) to cover conductive traces (54', 56). Note that such a coating renders conductive traces (54', 56) passive to any unwanted electrical interaction (e.g. short circuits, etc).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added the thin protective coating, such as taught in Quan, to cover the otherwise exposed conductive layers on the surfaces of the printed circuit boards of either of the above primary references. Such a modification would have provided the advantageous benefit of isolating and protecting the conductive traces from the

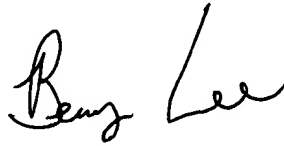
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detrimental effects of exposure to the external environment, thereby suggesting the obviousness of the combination.

Applicant's arguments with respect to claims 6, 14, 17 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

B. Lee

A handwritten signature in cursive script, appearing to read "Benny Lee".

BENNY T. LEE  
PRIMARY EXAMINER  
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